

# P6CU-xxxxE/Z LF



## PM1-SERIES

Rev.02-2009

- ✓ 1 Watt
- ✓ Unregulated
- ✓ **Single** and **Dual** Output
- ✓ **SIP7** Case
- ✓ **1 kV** DC I/O Isolation
- ✓ Low Ripple and Noise

The PM1 series P6CU-xxxxE/ZLF is a family of cost effective 1 W single & dual output DC-DC converters. These converters are in an ultra miniature SIP7 case. Devices are encapsulated. High performance features: 1000VDC input/output isolation, high efficiency operation, output voltage accuracy of  $\pm 3\%$  maximum, input range of  $\pm 10\%$  tolerance and low output ripple and noise.

All specifications typical at  $T_a=25^\circ\text{C}$ , nominal input voltage and full load unless otherwise specified

### Input Specifications

Voltage Range	$\pm 10\%$
Input Filter	Capacitor
Input Reflected Ripple Current <sup>1</sup>	20 mA pk-pk

### Output Specifications

Voltage Accuracy	$\pm 3\%$
Short Circuit Protection	Short Term
Line Regulation	$\pm 1.2\% / 1\% V_{in}$ Change
Load Regulation (20% - 100%)	$\pm 10\%$ (3.3 Vout Models: $\pm 20\%$ )
Ripple and Noise (20Mhz bandwidth)	75 mV pk-pk
Temperature Coefficient	$\pm 0.02\% / ^\circ\text{C}$

### General Specifications

Efficiency	See Table
I/O Isolation Voltage (3 sec.)	1000 VDC
I/O Isolation Capacity	60 pF, typ.
I/O Isolation Resistance	1000 M Ohm
Switching Frequency	80 kHz (Variable)
Humidity	95% rel H
Reliability Calculated MTBF (MIL-HDBK-217F)	> 1.121 Mhrs

### Physical Specifications

Case Material	Non Conductive Black Plastic (UL94V-0 rated)
Potting Material	Epoxy (UL94V-0 rated)
Weight	~ 2.3g, typ.

### Environment Specifications

Operating Temperature	-40 to +85 $^\circ\text{C}$ (ambient)
Maximum Case Temperature	100 $^\circ\text{C}$
Storage Temperature	-40 to +125 $^\circ\text{C}$
Cooling	Free Air Convection (10 mm distance required)
RoHS Conform	Soldering 260 $^\circ\text{C}$ , max. (1.5 mm from case 10s.)

# Selection Guide

## Single Output

Order #	Input Voltage (Vdc)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF) <sup>2</sup>
<b>SINGLE OUTPUT</b>							
P6CU-3R33R3ELF	3.3	22	409	3.3	303	74	220
P6CU-3R305ELF	3.3	28	398	5	200	76	220
P6CU-053R3ELF	5	30	267	3.3	303	75	220
P6CU-0505ELF	5	30	256	5	200	78	220
P6CU-057R2ELF	5	30	270	7.2	138.9	74	220
P6CU-0509ELF	5	30	267	9	111.1	75	220
P6CU-0512ELF	5	30	263	12	83.3	76	220
P6CU-0515ELF	5	30	263	15	66.7	76	220
P6CU-0518ELF	5	30	267	18	55.6	75	220
P6CU-0524ELF	5	30	278	24	41.7	72	220
P6CU-123R3ELF	12	20	113	3.3	303	74	220
P6CU-1205ELF	12	20	113	5	200	74	220
P6CU-127R2ELF	12	20	113	7.2	138.9	74	220
P6CU-1209ELF	12	20	111	9	111.1	75	220
P6CU-1212ELF	12	20	108	12	83.3	77	220
P6CU-1215ELF	12	20	106	15	66.7	78	220
P6CU-1218ELF	12	20	106	18	55.6	78	220
P6CU-1224ELF	12	20	113	24	41.7	75	220
P6CU-243R3ELF	24	10	56	3.3	303	75	220
P6CU-2405ELF	24	10	54	5	200	77	220
P6CU-247R2ELF	24	10	56	7.2	138.9	75	220
P6CU-2409ELF	24	10	56	9	111.1	75	220
P6CU-2412ELF	24	10	53	12	83.3	78	220
P6CU-2415ELF	24	10	53	15	66.7	78	220
P6CU-2418ELF	24	10	53	18	55.6	78	220
P6CU-2424ELF	24	10	53	24	41.7	78	220
P6CU-483R3ELF	48	6	29	3.3	303	72	220
P6CU-4805ELF	48	6	29	5	200	72	220
P6CU-487R2ELF	48	6	29	7.2	138.9	72	220
P6CU-4809ELF	48	6	28	9	111.1	74	220
P6CU-4812ELF	48	6	28	12	83.3	74	220
P6CU-4815ELF	48	6	28	15	66.7	75	220
P6CU-4818ELF	48	6	29	18	55.6	72	220
P6CU-4824ELF	48	6	30	24	41.7	70	220

If you need other specifications, please enquire.

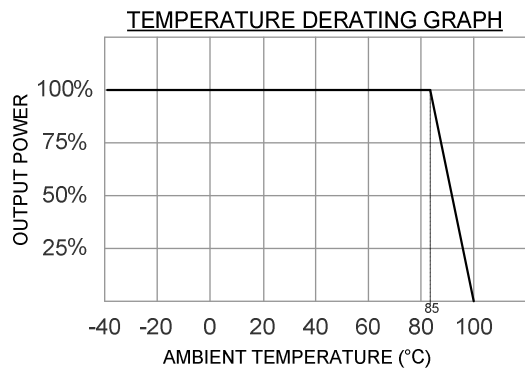
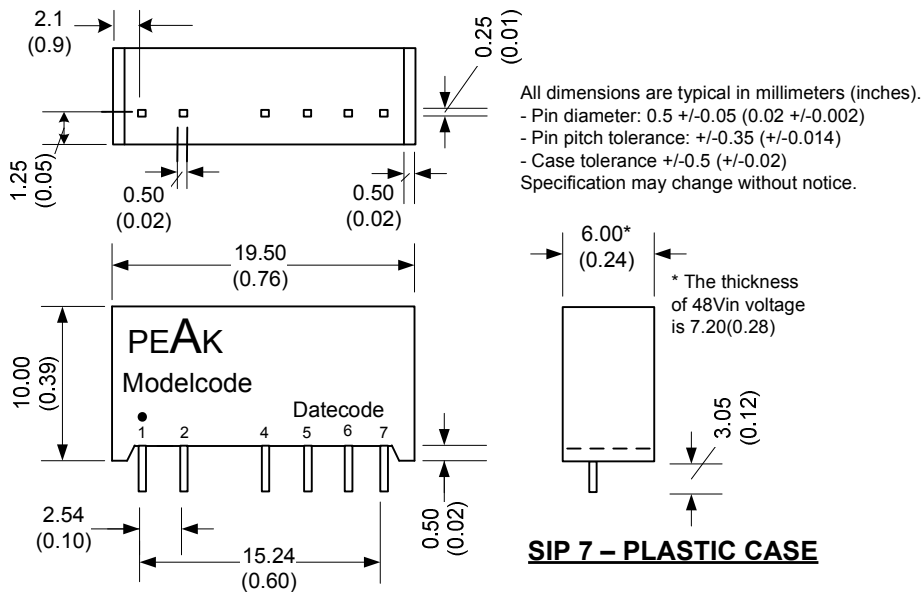
# Selection Guide

## Dual Output

Order #	Input Voltage (Vdc)	Input Current No Load (mA)	Input Current Full Load (mA)	Output Voltage (VDC)	Output Current Full Load (mA)	Efficiency (%)	Capacitor Load (uF)
<b>DUAL OUTPUT</b>							
P6CU-053R3ZLF	5	30	307	± 3.3	± 151.5	65	± 100
P6CU-0505ZLF	5	30	270	± 5	± 100	74	± 100
P6CU-057R2ZLF	5	30	259	± 7.2	± 69.44	77	± 100
P6CU-0509ZLF	5	30	256	± 9	± 55.55	78	± 100
P6CU-0512ZLF	5	30	256	± 12	± 41.67	78	± 100
P6CU-0515ZLF	5	30	250	± 15	± 33.33	80	± 100
P6CU-0518ZLF	5	30	253	± 18	± 27.77	79	± 100
P6CU-0524ZLF	5	30	250	± 24	± 20.83	80	± 100
P6CU-123R3ZLF	12	20	126	± 3.3	± 151.5	66	± 100
P6CU-1205ZLF	12	20	111	± 5	± 100	75	± 100
P6CU-127R2ZLF	12	20	109	± 7.2	± 69.44	76	± 100
P6CU-1209ZLF	12	20	109	± 9	± 55.55	76	± 100
P6CU-1212ZLF	12	20	106	± 12	± 41.67	78	± 100
P6CU-1215ZLF	12	20	104	± 15	± 33.33	80	± 100
P6CU-1218ZLF	12	20	104	± 18	± 27.77	80	± 100
P6CU-1224ZLF	12	20	109	± 24	± 20.83	76	± 100
P6CU-243R3ZLF	24	10	61	± 3.3	± 151.5	68	± 100
P6CU-2405ZLF	24	10	56	± 5	± 100	74	± 100
P6CU-247R2ZLF	24	10	54	± 7.2	± 69.44	76	± 100
P6CU-2409ZLF	24	10	54	± 9	± 55.55	76	± 100
P6CU-2412ZLF	24	10	53	± 12	± 41.67	78	± 100
P6CU-2415ZLF	24	10	53	± 15	± 33.33	78	± 100
P6CU-2418ZLF	24	10	53	± 18	± 27.77	78	± 100
P6CU-2424ZLF	24	10	53	± 24	± 20.83	78	± 100
P6CU-483R3ZLF	48	6	34	± 3.3	± 151.5	60	± 100
P6CU-4805ZLF	48	6	30	± 5	± 100	70	± 100
P6CU-487R2ZLF	48	6	30	± 7.2	± 69.44	70	± 100
P6CU-4809ZLF	48	6	29	± 9	± 55.55	72	± 100
P6CU-4812ZLF	48	6	28	± 12	± 41.67	74	± 100
P6CU-4815ZLF	48	6	28	± 15	± 33.33	74	± 100
P6CU-4818ZLF	48	6	29	± 18	± 27.77	72	± 100
P6CU-4824ZLF	48	6	30	± 24	± 20.83	70	± 100

If you need other specifications, please enquire.

# Package / Pinning / Derating

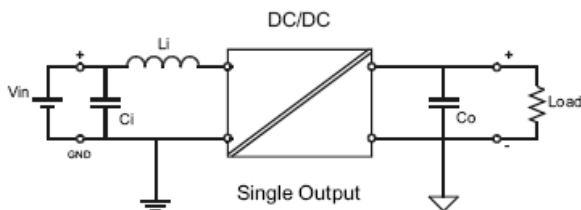


PIN CONNECTIONS		
#	SINGLE	DUAL
1	+Vin	+Vin
2	- Vin	- Vin
4	- Vout	- Vout
5	Omitted	Common
6	+Vout	+Vout
7	Omitted	Omitted

## App Notes:

- <sup>1</sup> = Measured Input reflected ripple current with a simulated source inductance of 12uH.
- <sup>2</sup> = Tested by minimal Vin and constant resistive load.

- Operation under no-load conditions will not damage these devices, but they will not observe the listed specifications.  
 - For reduce converter's ripple & noise, it is recommended to add a 4.7µF~100µF(±4.7µF~±68µF for dual output) capacitor in output end. For EMI performance improvement, it is recommended to add a 12µH inductor and a 10µF~100µF capacitor in input end.



Radiated Emissions  
ESD  
RS

## EMC SPECIFICATIONS

EN 55022  
FCC 47CFR Part 15/A  
IEC 61000-4-2  
IEC 61000-4-3

CLASS B  
CLASS B  
Perf. Criteria B  
Perf. Criteria A